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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,286	05/01/2001	Tadayasu Meguro	35.C15514	3064

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EXAMINER

PHAN, THANH S

ART UNIT PAPER NUMBER

2841

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/845,286

Applicant(s)

MEGURO ET AL.

Examiner

Thanh S Phan

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19, recite "...wherein said insulating material film contains a plurality of metallic oxide particles, said plurality of the contained metallic oxide particles form a metallic oxide particle layer between said surface and said insulating material film..." It is unclear if the metallic oxide is included as part of the insulating layer, or the "metallic oxide particle layer" and the "insulating layer" are two different layers.

As best understood by the examiner;

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7, 8, 10, 11, 15, 16, 18, 19, 22, 27, 28 and 30-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshioka et al. [5,066,883].

Regarding claims 1, 11, 19, 32. Yoshioka et al. disclose an electron source forming substrate [4] comprising an insulating material film [11] provided on a substrate

Art Unit: 2841

surface where an electron-emitting device is arranged, wherein said insulating material film contains a plurality of metallic oxide particles [9] and vacancy [portions around the particles, see figure 1] are provided among said plurality of metallic oxide particles.

Regarding claims 2, 3, 15, 16, 18, 22, 27, 28, 30 and 31. Yoshioka et al. disclose wherein said metallic oxide is an electronically conductive oxide, and is SnO<sub>2</sub> [column 7, lines 44-59].

Regarding claims 7, 8, 10. Yoshioka et al. disclose the claimed invention, wherein the insulating material of said insulating material film is SiO<sub>2</sub> or laminated [column 10, lines 42-45].

Regarding claim 33. Yoshioka et al. further disclose the electron-emitting device comprising a conductive film including an electron-emitting portion [1, 2].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 6, 12-14, 17, 20, 21, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al. [5,066,883].

Regarding claims 4, 12, and 20. Yoshioka et al. disclose the claimed invention except for the insulating material film has a ratio of said vacancy in its cross section within the range of 5% to 10%. Yoshioka et al. teaches that it is known to select the

Art Unit: 2841

amount of particles to be included into the insulating layer. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to adjust the range of vacancy as taught by Yoshioka et al., since Yoshioka et al. states at column 9, lines 8-19 that such a modification would have been obvious.

Regarding claims 5, 9, 13, and 17. Yoshioka et al. disclose the claimed invention except for the thickness of said insulating material film is within the range of 150 nm to 3  $\mu\text{m}$ , or 20 nm to 3  $\mu\text{m}$ . Yoshioka et al. teach that it is known to formed the insulating layer having a thickness of from several ten angstrom to several  $\mu\text{m}$  as set forth at column 9, lines 51-53. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the insulating material film is within the range of 150 nm to 3  $\mu\text{m}$ , or 20 nm to 3  $\mu\text{m}$  as suggested by Yoshioka et al.

Regarding claims 6, 14, and 21. Yoshioka et al. disclose the claimed invention except for the insulating material film further contains phosphorus. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to contains phosphorus, since it was known in the art that phosphorus is used for doping.

Regarding claims 23, 24. Yoshioka et al. disclose the claimed invention except for the average particle size of said plurality of metallic oxide particles is within the range of 6 nm to 20 nm/ 6nm to 60 nm. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the metallic oxide particles is within the range of 6 nm to 20 nm/ 6nm to 60 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Art Unit: 2841

Regarding claims 25, 26. Yoshioka et al. disclose the claimed invention except for the size of said vacancy is within the range of 0.1 to 5 / 0.1 to 2 times the average particle size of said plurality of metallic oxide particles. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the size of said vacancy is within the range of 0.1 to 5 / 0.1 to 2 times the average particle size of said plurality of metallic oxide particles, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claims 29~~/~~ and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al. as applied to claims 1, 11 or 19 above, and further in view of Shinjo et al. [6,420,825].

Regarding claim 29. Yoshioka et al. disclose the claimed invention except for said substrate is a substrate containing sodium. Shinjo et al. disclose a substrate for a electron-emitting device wherein the substrate containing sodium [column 15, line 60-65]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Yoshioka et al.'s substrate with Shinjo et al.'s for the purpose of reducing concentration level.

Regarding claim 34. Yoshioka et al. disclose the claimed invention except for a plurality of said electron-emitting devices are matrix-wired by a plurality of row-directional wirings and a plurality of column-directional wirings. Shinjo et al. disclose an electron-emitting device wherein the devices are matrix-wired by a plurality

Art Unit: 2841

of row-directional wirings and a plurality of column-directional wirings [figure 2]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshioka et al.'s with Shinjo et al.'s for the purpose of providing voltage for the devices.

Claims 35 - 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinjo et al. [6,420,825] in view of Yoshioka et al. [5,066,883].

Regarding claim 35. Shijo et al. disclose an image display apparatus comprising an electron-emitting device an image display member for displaying images by irradiation of electron from said electron-emitting device and an envelope in which said electron-emitting device and said image display member are arranged [figure 2]. Yoshioka et al. disclose wherein a substrate where said electron emitting device is arranged are electron source forming substrate according to any one of claims 1, 11 or 19. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Yoshioka et al.'s substrate with Shinjo et al.'s apparatus for the purpose of stabilizing electron-emitting characteristic.

Regarding claim 36. Yoshioka et al. further disclose wherein said electron-emitting devices are electron-emitting devices comprising a conductive film containing the electron-emitting portion.

Regarding claim 37. Shinjo et al. further disclose wherein a plurality of said electron-emitting devices are matrix-wired by a plurality of row directional wirings and a plurality of column directional wirings.

Art Unit: 2841

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsukamoto [5,986,389], Mitsutake et al. [5,594,296], Motoi et al. [6,380,665], Borel et al. [4,940,916], Fushimi et al. [5,936,343], Kuroda et al. [6,366,014], Kumar [5,861,707], Banno et al. [5,530,314].

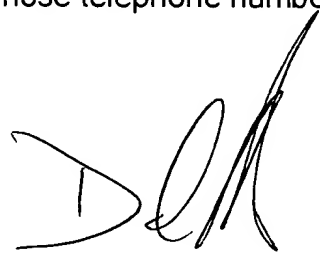
**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh S Phan whose telephone number is 703-305-0069. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David S Martin can be reached on 703-308-3121. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7722 for regular communications and 703-305-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TSP  
September 18, 2002



**DAVID MARTIN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**



Application/Control Number: 09/845,286  
Art Unit: 2841

Page 8